

WHAT IS CLAIMED IS:

- 1           1.       A method for generating a graphical representation of a processing system in  
2       which one or more work pieces are processed in a number of process stations comprising:  
3               forming a first line segment in a first direction, the first line segment indicating the time  
4       one or more work pieces spends in a first process station; and  
5               forming a second line segment connected to the first line segment in a second direction,  
6       the second line segment representing the transfer of the one or more work pieces from the first  
7       process station to a second process station.  
8
- 1           2.       The method of claim 1 wherein the step of forming a first line segment further  
2       comprises forming a first line segment wherein the thickness of the line segment represents the  
3       number of work pieces in the first process station.  
4
- 1           3.       The method of claim 1 wherein the step of forming a second line second  
2       comprises forming a second line segment wherein the thickness of the second line segment  
3       represents the time taken to transfer the work pieces between the first process station and the  
4       second process station.  
5
- 1           4.       The method of claim 1 further comprising the step of forming additional line  
2       segments in a first direction to represent time work pieces spend in additional process stations  
3
- 1           5.       The method of claim 1 further comprising the step of forming additional line  
2       segments in a second direction to represent the transfer of work pieces from one process station  
3       to another process station, the additional vertical lines connecting an end of processing in one  
4       process station and a beginning of processing in another process station.  
5
- 1           6.       The method of claim 1, further comprising using a different color to represent  
2       work pieces belonging to a different batch.  
3
- 1           7.       The method of claim 1 wherein the step of forming a first line segment and the  
2       step of forming a second line segment further comprises forming a first line segment in response  
3       to data generated by a processing tool and forming a second line segment in response to data  
4       generated by the processing tool.

1           8.     The method of claim 1 wherein the step of forming a first line segment and the  
2 step of forming a second line segment further comprises forming a first line segment in response  
3 to data generated by a simulator and forming a second line segment generated by a data  
4 generated by a simulator.

1           9.     The method of claim 1 further comprising generating additional graphical  
2 representations of a processing system for a different batch of work pieces.

1           10.    A method for graphically representing the progress of one or more wafers being  
2 processed in a plurality of process stations comprising:

3               determining the start of a first process performed on one or more wafers in one of the  
4 plurality of process stations;

5               initiating the generation of a first line segment in a first direction corresponding to the  
6 start of the process in one of the plurality of process stations;

7               determining the end of the first process in one of the plurality of process stations;

8               terminating the first line segment;

9               determining the start of a transfer of one or more wafers from one of the plurality of  
10 process stations to another one of the plurality of process stations;

11              initiating the formation of a second line segment in a second direction substantially  
12 perpendicular to the first line segment and connected to the first line segment;

13              determining the completion of the transfer of the one or more wafers;

14              terminating the formation of the second line segment; and

15              repeating the step of determining the start of a process.

1           11.    The method of claim 10 wherein the step of initiating the generation of a line  
2 segment further comprises initiating the generation of a line segment wherein the thickness of  
3 the line segment is indicative of the number of wafers in the first process station.

1           12.    The method of claim 10, wherein the step of initiating the formation of a line  
2 segment substantially perpendicular to the first axis comprises initiating the formation of a line  
3 segment substantially perpendicular to the first axis wherein the thickness of the second line  
4 segment is proportional to the time taken to transfer the wafers.

1 13. The method of claim 10, wherein the wafers are contained in one or more carriers.

1 14. The method of claim 13 further comprising using a different color to represent  
2 wafers belonging to a different batch of wafers.

1 15. The method of claim 10 wherein the process stations are part of a cluster tool.

1 16. A display coupled to a controller for showing a graphical representation of a  
2 process involving a plurality of process stations in the manufacture of one or more work pieces  
3 comprising:

4 a graph area to display the graphical representation, the graphical representation  
5 comprising:

6 a plurality of line segments in a first direction, the length of the line segments in  
7 the first direction indicative of the time one or more work pieces spend in one of the  
8 plurality of process stations; and

9 a plurality of line segments in a second direction, the line segments in the second  
10 direction connecting the line segments in the first direction, the line segments in the  
11 second direction representing the transfer of one or more work pieces from one of the  
12 plurality of process stations to another one of the plurality of process stations.

1 17. The display of claim 16 wherein two or more graphical representations are  
2 included in the graph area, each of the graphical representation representing the processing of a  
3 different batch of work pieces.

1 18. The display of claim 17 wherein each graphical representation is displayed using  
2 a different color or shading.

1 19. The display of claim 16 wherein the graphical representation is formed in  
2 response to data generated by a processing tool.

1 20. The graphical display of claim 16 wherein the graphical representation is formed  
2 in response to data generated by a simulator.

1           21.    A manufacturing system comprising:  
2                   a process tool having a plurality of process stations that perform manufacturing  
3 steps on a plurality of work pieces;  
4                   a controller coupled to the process tool to send control commands to the process  
5 tool;  
6                   a display coupled to the controller, the display receiving data from the controller  
7 regarding the processing of the plurality of work pieces in the process tool, the display having a  
8 graph area to display a graphical representation of the processing of the work pieces, the  
9 graphical representation comprising:  
10                  a plurality of line segments in a first direction, the length of the line segments in  
11 the first direction indicative of the time one or more work pieces spend in one of the  
12 plurality of process stations; and  
13                  a plurality of line segments in a second direction, the line segments in the second  
14 direction connecting the line segments in the first direction, the line segments in the  
15 second direction representing the transfer of one or more work pieces from one of the  
16 plurality of process stations to another one of the plurality of process stations.

1           22.    The system of claim 21 wherein two or more graphical representations are  
2 included in the graph area, each of the graphical representation representing the processing of a  
3 different batch of work pieces.

1           23.    The system of claim 22 wherein each graphical representation is displayed using  
2 a different color or shading.

1           24.    The system of claim 21 wherein the graphical representation is formed in  
2 response to data generated by a processing tool.

1           25.    The system of claim 21 wherein the graphical representation is formed in  
2 response to data generated by a simulator.

1           26.    A semiconductor wafer manufacturing system comprising:  
2                   a cluster tool having a plurality of process stations that perform manufacturing  
3 steps on a plurality of semiconductor wafers;  
4                   a controller coupled to the cluster tool to send control commands to the cluster  
5 tool;  
6                   a display coupled to the controller, the display receiving data from the controller  
7 regarding the processing of the plurality of semiconductor wafers in the process tool, the display  
8 having a graph area to display a graphical representation of the processing of the semiconductor  
9 wafers, the graphical representation comprising:  
10                  a plurality of line segments in a first direction, the length of the line segments in  
11 the first direction indicative of the time one or more semiconductor wafer spend in one of  
12 the plurality of process stations; and  
13                  a plurality of line segments in a second direction, the line segments in the second  
14 direction connecting the line segments in the first direction, the line segments in the  
15 second direction representing the transfer of one or more semiconductor wafer from one  
16 of the plurality of process stations to another one of the plurality of process stations.

1           27.    The system of claim 26 wherein two or more graphical representations are  
2 included in the graph area, each of the graphical representation representing the processing of a  
3 different batch of wafers.

1           28.    The system of claim 27 wherein each graphical representation is displayed using  
2 a different color or shading.

1           29.    The system of claim 26 wherein the graphical representation is formed in  
2 response to data generated by a simulation of a cluster tool.

5  
1 30. A program product comprising:

2 a computer readable storage medium for storing instructions that, when executed  
3 by a computer causes the computer to perform a method for generating a graphical  
4 representation of a processing system in which one or more work pieces are processed in  
5 a number of process stations comprising:

6 computer readable program code for forming a first line segment in a first  
7 direction, the first line segment indicating the time one or more work pieces spends in a  
8 first process station; and

9 computer readable program code for forming a second line segment connected to  
10 the first line segment in a second direction, the second line segment representing the  
11 transfer of the one or more work pieces from the first process station to a second process  
12 station.  
13

1 31. The program product of claim 30 wherein the computer readable program code  
2 for forming a first line segment further comprises computer readable program code for forming  
3 a first line segment wherein the thickness of the line segment represents the number of work  
4 pieces in the first process station.  
5

1 32. The program product of claim 30 wherein the computer readable program code  
2 for forming a second line second comprises computer readable program code for forming a  
3 second line segment wherein the thickness of the second line segment represents the time taken  
4 to transfer the work pieces between the first process station and the second process station.  
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1 33. The program product of claim 30 further comprising computer readable program  
2 code for forming additional line segments in a first direction to represent time work pieces spend  
3 in additional process stations.  
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1 34. The program product of claim 30 further comprising computer readable program  
2 code for forming additional line segments in a second direction to represent the transfer of work  
3 pieces from one process station to another process station, the additional vertical lines  
4 connecting an end of processing in one process station and a beginning of processing in another  
5 process station.  
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1           35.    The program product of claim 30 further comprising computer readable program  
2 code for using a different color to represent work pieces belonging to a different batch.

1           36.    The program product of claim 30 wherein the computer readable program code  
2 for forming a first line segment and the computer readable program code for forming a second  
3 line segment further comprises computer readable program code for forming a first line segment  
4 in response to data generated by a processing tool and computer readable program code for  
5 forming a second line segment in response to data generated by the processing tool.

1           37.    The program product of claim 30 wherein the computer readable program code  
2 for forming a first line segment and the computer readable program code for forming a second  
3 line segment further comprises computer readable program code for forming a first line segment  
4 in response to data generated by a simulator and computer readable program code for forming a  
5 second line segment generated by a data generated by a simulator.

1           38.    The program product of claim 30 further comprising computer readable program  
2 code for generating additional graphical representations of a processing system for a different  
3 batch of work pieces.